IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	)
	) Atty. Docket: **ASAIN 0100**
Hideaki KOMAKI et al.	)
	)
Serial No.: Unassigned	) Group Art Unit:
	)
Filed: Herewith	) Examiner:
	)
For: METHOD AND APPARATUS FOR REFORMING FUEL	)
	) Date: August 29, 2001

PRELIMINARY AMENDMENT (A)

Box: PATENT APPLICATION
Assistant Commissioner for Patents
Washington, D. C. 20231

Sir:

Prior to calculating the filing fee, please amend the above-captioned application as follows:

IN THE CLAIMS:

Kindly rewrite claims 3, 4, 8, 9 and 12-15 as follows:

3. (Amended) The reforming method specified in Claim 1, comprising a reforming tube (10) composed of two or more of the reforming rooms (6) connected in series, and a reformer housing (12) that encases the reforming tube, wherein

a high-temperature heating gas (16) is introduced into the space (14) formed between the reforming tubes and the reformer housing, and after the first catalyst (8a) and the second catalyst (8b) have been heated up from outside the reforming room, the gas mixture (2) is

supplied to each reforming room to undergo reforming.

4. (Amended) The reforming method specified in Claim 1, wherein the high-temperature heating gas (16) is supplied directly to one end of each of the reforming rooms (6) and is discharged from the other end of the furthest downstream reforming rooms, and after the first and second catalyst (8a, 8b) are heated up from inside the reforming rooms, the gas mixture (2) is supplied to each reforming room to undergo reforming.

8. (Amended) The reforming apparatus specified in Claim 5, comprising a reformer housing (12) that encases the reforming tube (10), and a first heating gas tube (28a) for introducing a high-temperature heating gas (16) into the space (14) formed between the reformer housing and the reforming tube, from the outside.

9. (Amended) The reforming apparatus specified in Claim 5, wherein a second heating gas tube (38b) is connected to the mixed gas feed tube (18), to introduce a high-temperature heating gas (16) from the outside.

12. (Amended) The reforming apparatus specified in Claim 10, wherein the feedback mechanism (134) sends the reformed gas (118) to the manifold through a reformed gas passage (136) formed by the space between the reforming tubes (130) located close to each other or between the reforming tubes and the casing (126), in the axial direction of the reforming tubes.

13. (Amended) The reforming apparatus specified in Claim 10, wherein the reforming tubes (13) can be freely removed and replaced.

14. (Amended) The reforming apparatus specified in Claim 10, wherein a fuel trap unit (138) is disposed between the manifold (116) and the CO removal unit (124), to remove fuel gas from the reformed gas (118).

15. (Amended) The reforming apparatus specified in Claim 10, wherein the manifold (116) comprises a feed tube (142) for feeding oxygen, air or steam to the reformed gas (118) sent to the CO removal unit (124).

IN THE ABSTRACT:

At page 48 of the specification, replace the section entitled "Abstract" with the following:

A gas mixture containing a fuel, water and air is supplied to one end of a reforming room, and a reformed gas containing hydrogen is discharged from the other end thereof. Two or more such reforming units are connected in series, and the upstream part of each reforming room is filled with a first catalyst which catalyzes a partial oxidation reaction in an oxygen-rich environment, and the downstream part is filled with a second catalyst which performs the reforming reaction. The gas mixture which has been heated in a heating unit passes through a distribution tube and is distributed evenly to the reforming units. The reforming room is composed of a reforming tube in which a reforming catalyst is charged, or two or more such

reforming tubes, parallel to each other. After being reformed the high-temperature reformed gas is passed around the reforming tubes, and fed back to a manifold.

REMARKS

With the above amendments, claims 3, 4, 8, 9 and 12-15 have been amended to delete the multiple dependencies and make those claims singly dependent.

The Abstract has been amended in order to conform with the requirements of 37 C.F.R. § 1.72.

For the convenience of the Examiner, a marked-up version of the amended claims and Abstract is attached.

In view of the above, it is believed that this application is now in condition for examination. Questions are welcomed by the below-signed attorney for applicants.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Claims:

3. (Amended) The reforming method specified in Claims 1 ~~or 2~~, comprising a reforming tube (10) composed of two or more of the reforming rooms (6) connected in series, and a reformer housing (12) that encases the reforming tube, wherein

a high-temperature heating gas (16) is introduced into the space (14) formed between the reforming tubes and the reformer housing, and after the first catalyst (8a) and the second catalyst (8b) have been heated up from outside the reforming room, the gas mixture (2) is supplied to each reforming room to undergo reforming.

4. (Amended) The reforming method specified in Claims 1, ~~2 or 3,~~ wherein the high-temperature heating gas (16) is supplied directly to one end of each of the reforming rooms (6) and is discharged from the other end of the furthest downstream reforming rooms, and after the first and second catalyst (8a, 8b) are heated up from inside the reforming rooms, the gas mixture (2) is supplied to each reforming room to undergo reforming.

8. (Amended) The reforming apparatus specified in Claims 5, ~~6 or 7,~~ comprising a reformer housing (12) that encases the reforming tube (10), and a first heating gas tube (28a) for introducing a high-temperature heating gas (16) into the space (14) formed between the reformer housing and the reforming tube, from the outside.

9. (Amended) The reforming apparatus specified in Claims 5, ~~6, 7 or 8,~~ wherein a second heating gas tube (38b) is connected to the mixed gas feed tube (18), to introduce a high-temperature heating gas (16) from the outside.

12. (Amended) The reforming apparatus specified in Claims 10 ~~or 11~~, wherein the feedback mechanism (134) sends the reformed gas (118) to the manifold through a reformed gas passage (136) formed by the space between the reforming tubes (130) located close to each other or between the reforming tubes and the casing (126), in the axial direction of the reforming tubes.

13. (Amended) The reforming apparatus specified in Claims 10, ~~11 or 12,~~ wherein the reforming tubes (13) can be freely removed and replaced.

14. (Amended) The reforming apparatus specified in ~~one of~~ Claims 10 ~~to 13~~, wherein a fuel trap unit (138) is disposed between the manifold (116) and the CO removal unit (124), to remove fuel gas from the reformed gas (118).

15. (Amended) The reforming apparatus specified in ~~one of~~ Claims 10 ~~to 14~~, wherein the manifold (116) comprises a feed tube (142) for feeding oxygen, air or steam to the reformed gas (118) sent to the CO removal unit (124).

In the Abstract:

ABSTRACT

A gas mixture ~~2~~ containing a fuel, water and air is supplied to one end of a reforming room ~~6~~, and a reformed gas 4 containing hydrogen is discharged from the other end thereof. Two or more such reforming units are connected in series, and the upstream part of each reforming room is filled with a first catalyst ~~8a~~ which catalyzes a partial oxidation reaction in an oxygen-rich environment, and the downstream part is filled with a second catalyst ~~8b~~ which performs the reforming reaction. The gas mixture ~~102~~ which has been heated in a heating unit ~~104~~ passes through a distribution tube ~~108~~ and is distributed evenly to the reforming units ~~114~~. The reforming room is composed of a reforming tube ~~130~~ in which a reforming catalyst ~~112~~ is charged, or two or more such reforming tubes, parallel to each other. After being reformed the high-temperature reformed gas ~~118~~ is passed around the reforming tubes, and fed back to a manifold ~~116~~.